
EG&G ISC ISC-ES-08 41 13.00 99 (January 2009)

Preparing Activity: EG&G ISC-ES Superseding
SGS-08 41 13.00 99 (April 2006)

EG&G ISC GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2009

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DIVISION 08 - OPENINGS

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SECTION 08 41 13.00 99

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS 01/09

NOTE: This section covers Aluminum Entrances, glass
and glazing, and door hardware and components.

Brackets are used in the text to indicate designer
choices or locations where text is to be supplied by
the designer.

PART 1 GENERAL

1.1 SUMMARY

This Specification includes aluminum entrances, glass and glazing, door
hardware, and components.

Type of Aluminum Entrance Includes:

Impact Resistance Entrances; medium stile, 3-1/2" vertical face
dimension, 1-3/4" depth, interior structural silicone glazed, high
traffic/impact resistant applications.

1.2 REFERENCES

NOTE: This paragraph is used to list the
publications cited in the text of the guide
specification. The publications are referred to in
the text by basic designation only and listed in
this paragraph by organization, designation, date,
and title.

Use the Reference Wizard's Check Reference feature
when you add a RID outside of the Section's
Reference Article to automatically place the
reference in the Reference Article. Also use the
Reference Wizard's Check Reference feature to update
the issue dates.

References not used in the text are automatically
deleted from this section of the project
specification when you choose to reconcile

references in the publish print process.

The publications listed below form a part of this section and the work requirements:

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

- AAMA 1503 (1998) Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections
- AAMA 501 (2005) Methods of Test for Exterior Walls
- AAMA 503 (2003) Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- ANSI A156.10 (2005) Power Operated Pedestrian Doors
- ANSI A156.19 (2007) Power Assist and Low-Energy Power-Operated Doors
- ANSI A156.4 (2008) Door Controls - Closers
- ANSI Z97.1 (2004) Safety Glazing Materials Used in Buildings

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

- ASCE/SEI 7-05 (2006) Minimum Design Loads for Buildings and Other Structures, Including Supplement No. 1

ASTM INTERNATIONAL (ASTM)

- ASTM B 221 (2008) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- ASTM B 221M (2007) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
- ASTM E 1105 (2000; 2008) Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference
- ASTM E 1424 (1991; 2008) Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure and Temperature Differences Across the Specimen

ASTM E 1886	(1997) Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
ASTM E 283	(2004) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
ASTM E 330	(2002) Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E 331	(2000) Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
ASTM E 783	(2002) Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors

DADE COUNTY BUILDING CODE COMPLIANCE OFFICE (DCBCCO)

DCBCCO Protocols PA-201	(1994) Air Infiltration/Wind Load Test
DCBCCO Protocols PA-202	(1994) Forced Entry Test
DCBCCO Protocols PA-203	(1994) Cycle Test

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS BUILDING CODES AND STANDARDS (FBC)

DCE/SFBC Section 3508	(2001) Missile Impact Test, Dade County Edition/Southern Florida Building Code
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GLASS ASSOCIATION OF NORTH AMERICA (GANA)

GANA GM	(2008) GANA Glazing Manual - 50th Anniversary Edition
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INTERNATIONAL CODE COUNCIL (ICC)

SBCCI Chapter 12	(November 2001) Interior Environment
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U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

16 CFR PART 1201	(2001) Safety Standard for Architectural Glazing Materials
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UNDERWRITERS LABORATORIES (UL)

UL 325	(2002; Rev thru Aug 2007) Door, Drapery, Gate, Louver, and Window Operators and Systems
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1.3 DESIGN REQUIREMENTS

1.3.1 Entrance Performance Requirements

1.3.1.1 Air Infiltration

For single acting offset pivot, butt hung or continuous geared hinge entrances in the closed and locked position, test the specimen in accordance with DCBCCO Protocols PA-202, ANSI A156.10, [ANSI A156.19,] [ANSI A156.4,] and ASTM E 283 at a pressure differential of 1.57 psf for pairs of doors; maximum infiltration for a pair of 6'0" x 8'0" entrance doors and frame is 1.2 cfm\ft².

Maximum allowable infiltration, for a completed storefront system is not to exceed 0.06 cfm/square foot when tested in accordance with ASTM E 1424 at differential static pressure of 299 Pa 6.24 psf

1.3.1.2 Wind Loads

Provide completed storefront system capable of withstanding wind pressure loads, normal to the wall plane indicated, as follows:

a. Exterior Walls

1. Positive Pressure: [] kilogram/square meter [] psf
2. Negative Pressure: [] kilogram/square meter [] psf

b. Interior Walls: (pressure acting in iether direction) [] kilogram/square meter [] psf

1.3.1.3 Deflection

The maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AA Specifications for Aluminum Structures:

- a. L/175 or 19.1 mm 3/4 inches maximum.

1.3.1.4 Condensation Resistance and Thermal Transmittance Performance Requirements

a. U-Value Requirements:

1. Perform test in accordance with AAMA 1503 procedure and on the configuration specified therein.
2. Thermal Transmittance ("U" Value) maximum [] 0.65 (6250) BTU/hr/sf/deg F at [] 15 mph exterior wind.

b. CRF Class Requirements:

1. Perform test in accordance with AAMA 1503.
2. Condensation Resistance Factor Requirements (CRF) minimum _____.

1.3.1.5 Water Infiltration

Design to provide no uncontrolled water when tested in accordance with ASTM E 331 at a static pressure of 956 Pa 8 psf.

1.3.2 Structural

Test corner strength per dual moment load test procedure and obtain certification by an independent testing laboratory to ensure weld compliance and corner integrity. Test and certify test results per AAMA 503, ASTM E 1105, ASTM E 783, ASTM E 331, DCE/SFBC Section 3508, SBCCI Chapter 12, and make available upon request.

1.3.2.1 Uniform Load

Apply a static air design load of 85 psf (65 psf for 9/16" laminated infill) in the positive and negative direction in accordance with DCBCCO Protocols PA-202, AAMA 501, and ASTM E 330. No deflections are allowed to exceed 1/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage is allowed.

1.3.2.2 Impact Resistance

Large Missile, tested in accordance with DCBCCO Protocols PA-201, DCBCCO Protocols PA-203, DCE/SFBC Section 3508, SBCCI Chapter 12, and ASTM E 1886 at a door opening of 6'0" x 8'0".

1.3.2.3 Forced Entry

Tested in accordance with SFBC 3603.2 (b) (5).

1.4 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Keep submittals to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy,

Air Force, and NASA projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy, Air Force, and NASA projects.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

Quality Assurance/Control Submittals:

SD-06 Test Reports

Submit [Certified Test Reports](#) showing compliance with specified performance characteristics and [UL 325](#).

SD-07 Certificates

Submit, for Owner's acceptance, [Manufacturer's Product Warranty](#) for entrance system as follows:

Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty begins in no event later than six months from date of shipment by manufacturer. In addition, support welded door corner construction with a limited lifetime warranty for the life of the door under normal use.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 Installer Qualifications

Installer experienced (as determined by Subcontractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.

1.5.1.2 Manufacturer Qualifications

Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method. Provide three copies of [Manufacturer's Product Warranty](#) and [Certified Test Reports](#).

1.5.2 Pre-Installation Meetings

Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.5.3 Single Source Responsibility

Provide design, structural engineering, and custom fabrication for door portal system and supply of all components, materials, and products based

on a single manufacturer of sole responsibility. Provision of products from numerous sources for site assembly without complete single source design and supply responsibility is not acceptable. Work items and components to be fabricated or supplied by single source are:

NOTE: Edit the following list to reflect components required for glass wall and door portal assembly. Verify that sole source responsibility requirement is included in other sections.

- a. Door assemblies to be installed in door portal as specified in [Section 08 11 16 ALUMINUM DOORS AND FRAMES] [____].
- b. Glazed wall to be constructed around door portal as specified in [Section 08 41 13.00 99 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS] [____].
- c. Door operating hardware to be installed on or within door portal as specified in Section 08 71 00 DOOR HARDWARE.
- d. Glass as specified in [Section 08 81 00 GLAZING] [____].
- e. Door hardware as specified in [Section 08 71 00 DOOR HARDWARE] [____].

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 Ordering

Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

1.6.2 Packing, Shipping, Handling and Unloading

Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1.6.3 Storage and Protection

Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

1.7 PROJECT CONDITIONS/ SITE CONDITIONS

1.7.1 Field Measurements

Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication scheduled with construction progress to avoid construction delays.

1.8 DESIGN AND PERFORMANCE CRITERIA

Design, size components, and install door portal system to withstand these

loads without breakage, loss, failure of seals, product deterioration, and other defects.

- a. Dead and Live Loads: Determined by **ASCE/SEI 7-05** and calculated in accordance with applicable codes.
- b. Seismic loads: Design and install system to comply with applicable seismic requirements for project location as defined by of ICC IBC.
- c. Effects of applicable wind load acting inward and outward normal to plane of wall in accordance with **ASTM E 330**.
- d. Thermal loads and movement:
 1. Ambient temperature range: **[[120] [_____] degrees F.] [[67] [_____] degrees C.]**
 2. Material surfaces range: **[[180] [_____] degrees F.] [[100] [_____] degrees C.]**
- e. Provide and install weatherstripping, exterior gaskets, sealants, and other accessories to resist water and air penetration.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Aluminum (Entrances and Components)

2.1.1.1 Material Standard

ASTM B 221 ASTM B 221M; 6063-T5 alloy and temper

Provide door stile and rail face dimensions of the entrance doors as follows:

Vertical Stile	Top Rail	Bottom Rail
3-1/2"	3-1/2"	6-1/2"

Provide major portions of the door members at **.125 inches** nominal in thickness and glazing molding to be **.050 inches** thick.

2.1.1.2 Tolerances

Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.

Provide either EPDM elastomeric extrusions or thermoplastic elastomer glazing gaskets. Structural silicone sealant is required.

2.1.2 Proprietary Product(s)/System(s)

Kawneer Aluminum Entrances.

Series: 350 IR Entrances

Finish/Color: Interpon D2000 Powder Coating "Midnight Blue"

2.2 Alternate Manufacturers

Alternate manufacturers are acceptable providing they meet the requirements and intent identified in this section and project drawings.

2.3 MATERIALS

2.3.1 Aluminum (Entrances and Components)

2.3.1.1 Material Standard

ASTM B 221ASTM B 221M; 6063-T5 alloy and temper

Provide door stile and rail face dimensions of the entrance doors as follows:

Vertical Stile	Top Rail	Bottom Rail
3-1/2"	3-1/2"	6-1/2"

Major portions of the door members to be .125" nominal in thickness and glazing molding to be .050" thick.

2.3.1.2 Tolerances

Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.

Provide either EPDM elastomeric extrusions or thermoplastic elastomer glazing gaskets. Structural silicone sealant is to be Dow Corning 983 or 995.

2.4 ACCESSORIES

2.4.1 Fasteners

Provide stainless steel where exposed.

2.4.2 Perimeter Anchors

When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.4.3 Standard Entrance Hardware

2.4.3.1 Weatherstripping

Equip meeting stiles on pairs of doors with an adjustable astragal utilizing wool pile with polymeric fin.

Provide door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.

Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners. (Necessary to meet specified performance tests.)

2.4.3.2 Threshold

Extruded aluminum, one piece per door opening, with ribbed surface.

2.4.3.3 Offset Pivots

Manufacturer standard top and bottom pivots with one intermediate offset pivot.

2.4.3.4 Panic Device

Jackson 2086 Concealed Vertical Rod Exit Device or Paneline Concealed Rod Exit Device (tested to +/- 65 psf Uniform Load).

2.4.3.5 Closer

Surface closer only.

2.4.3.6 Security Lock/Dead Lock

A/R MS 1850A lock with (2) A/R 1871 cylinder operated flush bolts.

2.4.3.7 Cylinder(s)/Thumb-turn

Manufacturer standard.

2.4.3.8 Cylinder Guard

Manufacturer standard.

2.5 RELATED MATERIALS

2.5.1 Sealants

Refer to Section 07 92 00 JOINT SEALANTS.

2.5.2 Glass

Refer to Section 08 81 00 GLAZING.

2.6 FABRICATION

2.6.1 Entrance System Fabrication

Provide door corner construction consisting of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" long fillet welds inside and outside of all four corners. Provide hook-in type exterior glazing stop with EPDM glazing gaskets reinforced with non-stretchable cord. Provide interior glazing stop mechanically fastened to the door member incorporating a silicone compatible spacer used with silicone sealant.

Accurately fit and secure joints and corners. Make joints hairline in Arrange fasteners and attachments to conceal from view. hardware.

2.6.2 Shop Assembly

Fabricate and assemble units with joints only at intersection of aluminum members with hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.

2.6.2.1 Welding

Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

2.6.3 Fabrication Tolerance

Fabricate and assemble units with joints only at intersection of aluminum members with hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.

Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.

2.6.3.1 Material Cuts

Square to 0.8 mm 1/32 inch off square, over largest dimension; proportionate amount of 0.8 mm 1/32 inch on the two dimensions.

[2.6.3.2 Maximum Offset

1/64 inch 0.4 mm in alignment between two consecutive members in line, end to end.]

[2.6.3.3 Maximum Offset

0.4 mm 1/64 inch between framing members at glazing pocket corners.]

2.6.3.4 Joints

(Between adjacent members in same assembly): Hairline and square to adjacent member.

2.6.3.5 Variation

In squaring diagonals for doors and fabricated assemblies: 1.6 mm 1/16 inch.

2.6.3.6 Flatness

For doors and fabricated assemblies: 1.6 mm +/- 1/16 inch of neutral plane.

2.7 SOURCE QUALITY CONTROL

2.7.1 Source Quality

Provide aluminum entrances specified herein from a single source.

2.7.1.1 Building Enclosure System

When aluminum entrances are part of a building enclosure system, including storefront framing, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

2.7.2 Fabrication Tolerances

Fabricate aluminum entrances in accordance with entrance manufacturer's

prescribed tolerances.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Site Verification of Conditions

Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.

Verify openings are sized to receive storefront system and sill plate is level in accordance with manufacturer's acceptable tolerances.

3.1.2 Field Measurements

Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.2 INSTALLATION

Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities. Provide alignment attachments and shims to permanently fasten system to building structure. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.

Set thresholds in bed of mastic and secure. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylatron pads or bituminous coating. Shim and brace aluminum system before anchoring to structure. Verify weep holes are open, and metal joints are sealed in accordance with manufacturer's installation instructions. Seal metal to metal joints using sealant recommended by system manufacturer.

3.2.1 Preparation

Field verify dimensions prior to fabricating door portal assembly components.

Coordinate requirements for locations of blockouts for anchorage of door portal columns and other embedded components with Section 03 30 00 CAST-IN-PLACE CONCRETE.

Coordinate erection of door portal with installation of surrounding glass wall and door assemblies. Ensure adequate provision is made for support and anchorage of assembly components.

NOTE: Edit the following list to reflect components
required for glass wall and door portal assembly.
Verify that sole source responsibility requirement
is included in other sections.

Coordinate electrical requirements for [automatic door assemblies] [electrified door hardware] to ensure proper power source, conduit, wiring, and boxes.

3.2.1.1 Adjacent Surfaces Protection

Protect adjacent work areas and finish surfaces from damage during product installation.

3.2.1.2 Aluminum Surface Protection

Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

3.2.2 Adjusting

Adjust operating hardware for smooth operation, and as recommended by the manufacturer.

3.2.3 Related Products Installation Requirements

3.2.3.1 Sealants (Perimeter)

Refer to Section 07 92 00 JOINT SEALANTS.

3.2.3.2 Glass

Refer to Section 08 81 00 GLAZING.

3.2.3.3 Reference

ANSI Z97.1, 16 CFR PART 1201 and GANA GM.

3.3 PROTECTION AND CLEANING

3.3.1 Protection

Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

3.3.2 Cleaning

Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

-- End of Section --